

iOS 7 Tech Talks 2013



San Francisco



New York



Tokyo



Shanghai



Berlin



London

These are confidential sessions—please refrain from streaming, blogging, or taking pictures

Integrating iOS 7 System Technologies

Paul Marcos

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Push updates

AirDrop from Activity sheet

Add to Reading List

Ranking-style leaderboards

Background asset downloads

Game score signing

3D map view

UIKit Dynamics

Inter-app audio

Map snapshots

Dynamic type size

Sprite Kit

Directions API

Custom video compositors

iBeacon

Authenticated Game Center players

Automatic Configuration



New Core Image filters

Game controllers

Expanded Bluetooth LE profile support

Guided Access API

Multipeer connectivity

60fps video capture

New turn-based game modes

Multitasking

Map tile overlays

Geodesic polylines

Technology advancements
enable experience enhancements

Agenda

Background Transfers

Multitasking

Security & Privacy

Agenda

Background Transfers

Multitasking

Security & Privacy

This item is over 100MB.

Paddle Mania 3000 will not
download until you connect to Wi-Fi.

Cancel

OK

Minimizing Install Time

- ☐ Take inventory
- ☐ Use compression
- ☐ Download things later

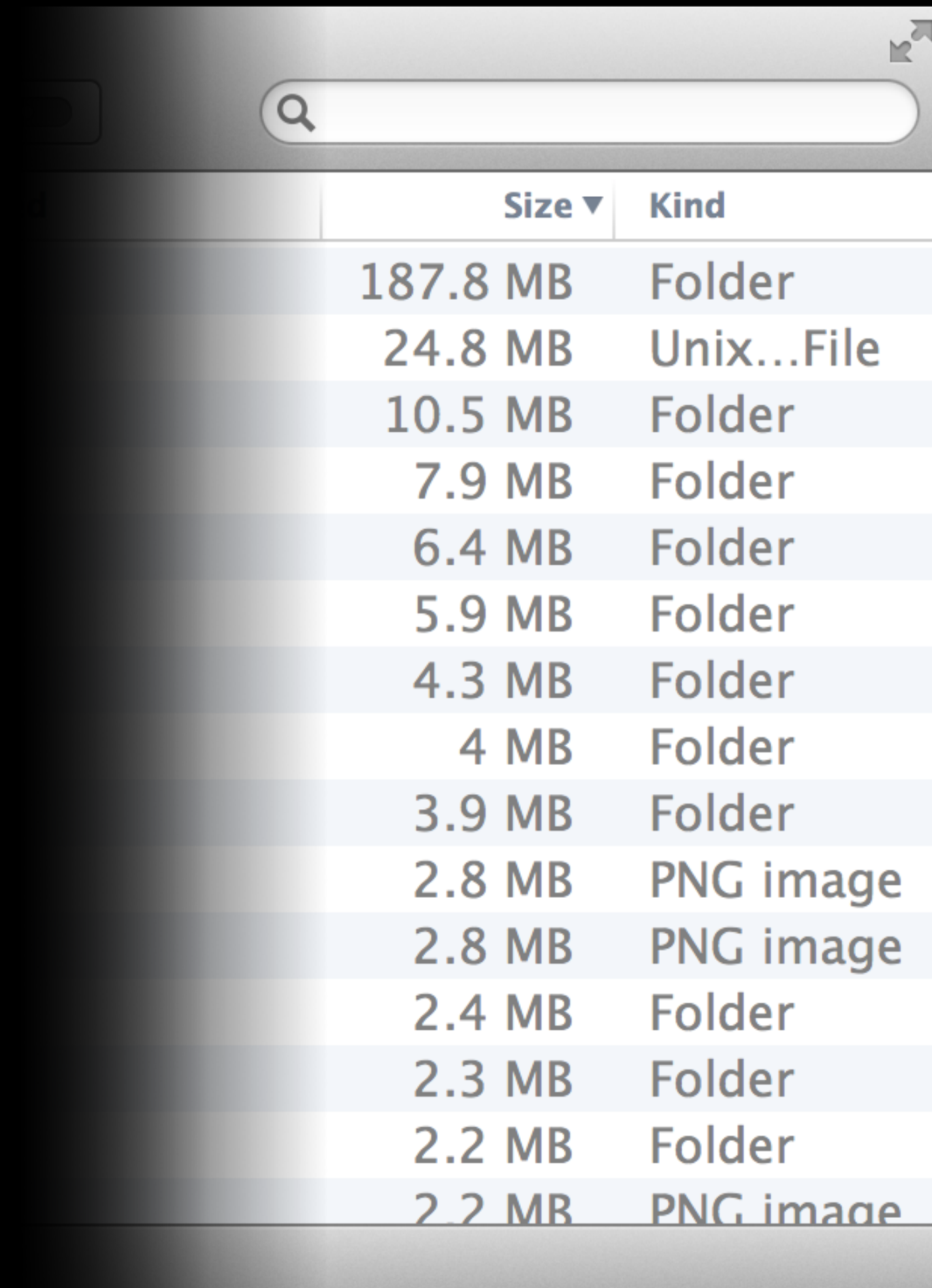
Take Inventory

- Open your app bundle in Finder



Take Inventory

- Open your app bundle in Finder
- Review every file

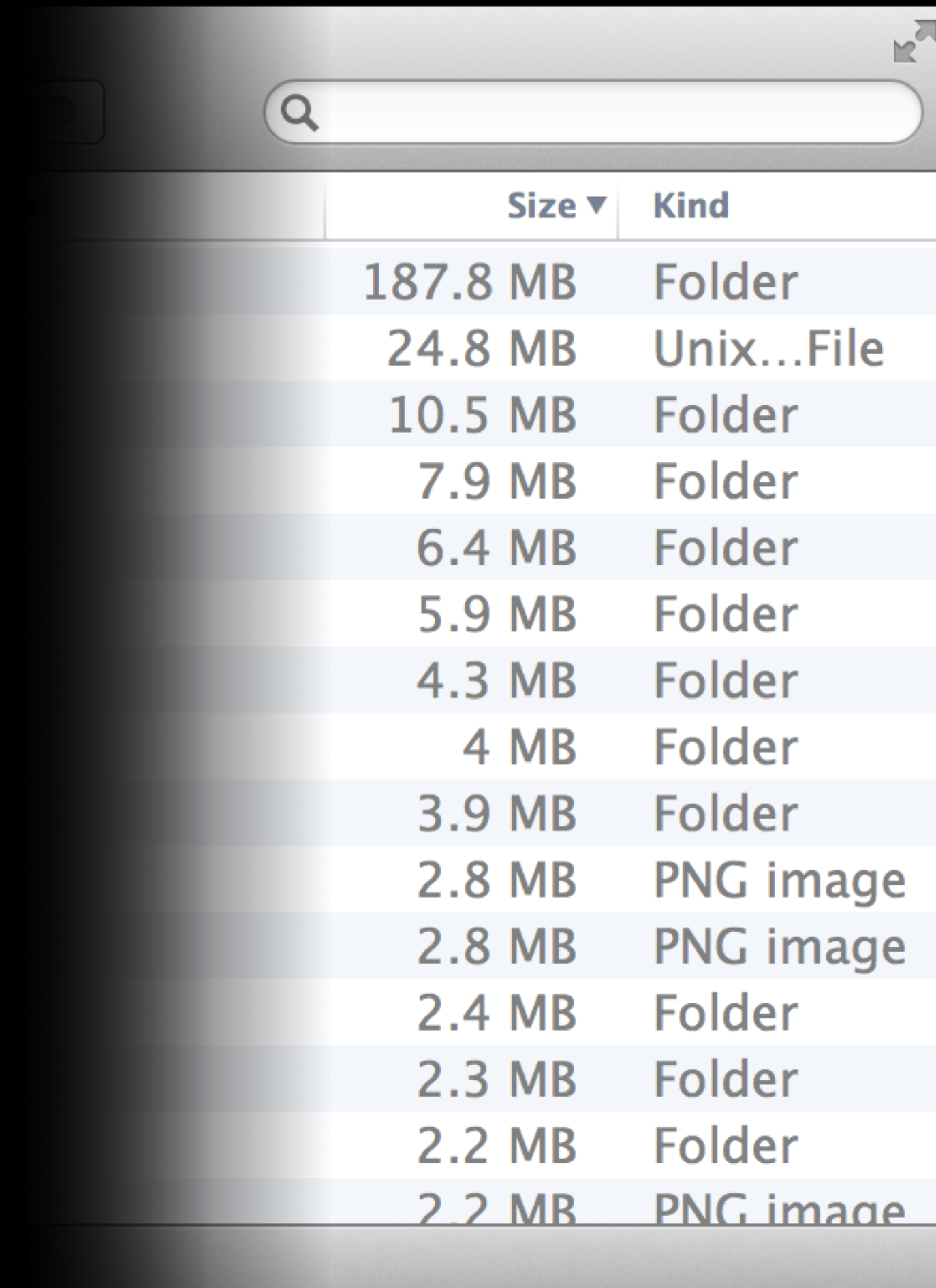


A screenshot of a macOS Finder window. The window has a search bar at the top. Below it is a table with three columns: Name, Size, and Kind. The table lists various files and folders, including several folders of different sizes and two PNG images.

	Size ▼	Kind
	187.8 MB	Folder
	24.8 MB	Unix...File
	10.5 MB	Folder
	7.9 MB	Folder
	6.4 MB	Folder
	5.9 MB	Folder
	4.3 MB	Folder
	4 MB	Folder
	3.9 MB	Folder
	2.8 MB	PNG image
	2.8 MB	PNG image
	2.4 MB	Folder
	2.3 MB	Folder
	2.2 MB	Folder
	2.2 MB	PNG image

Take Inventory

- Open your app bundle in Finder
- Review every file
- Clean house
 - READMEs, .psd, .h and .m files
 - Stray files dragged into Xcode

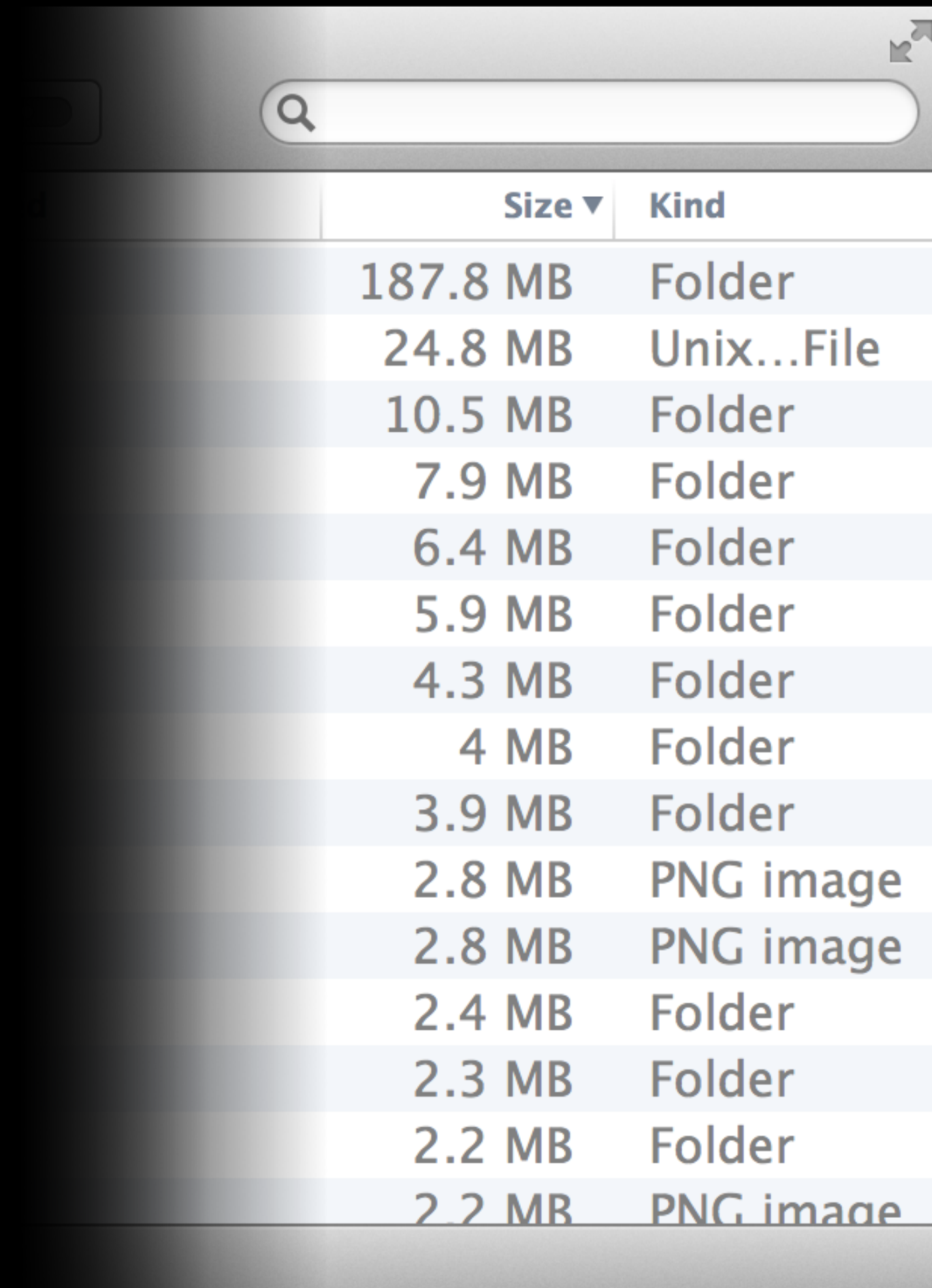


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	5.9 MB	Folder
	4.3 MB	Folder
	4 MB	Folder
	3.9 MB	Folder
	2.8 MB	PNG image
	2.8 MB	PNG image
	2.4 MB	Folder
	2.3 MB	Folder
	2.2 MB	Folder
	2.2 MB	PNG image

Take Inventory

- Open your app bundle in Finder
- Review every file
- Clean house
 - READMEs, .psd, .h and .m files
 - Stray files dragged into Xcode
 - Obsolete resources

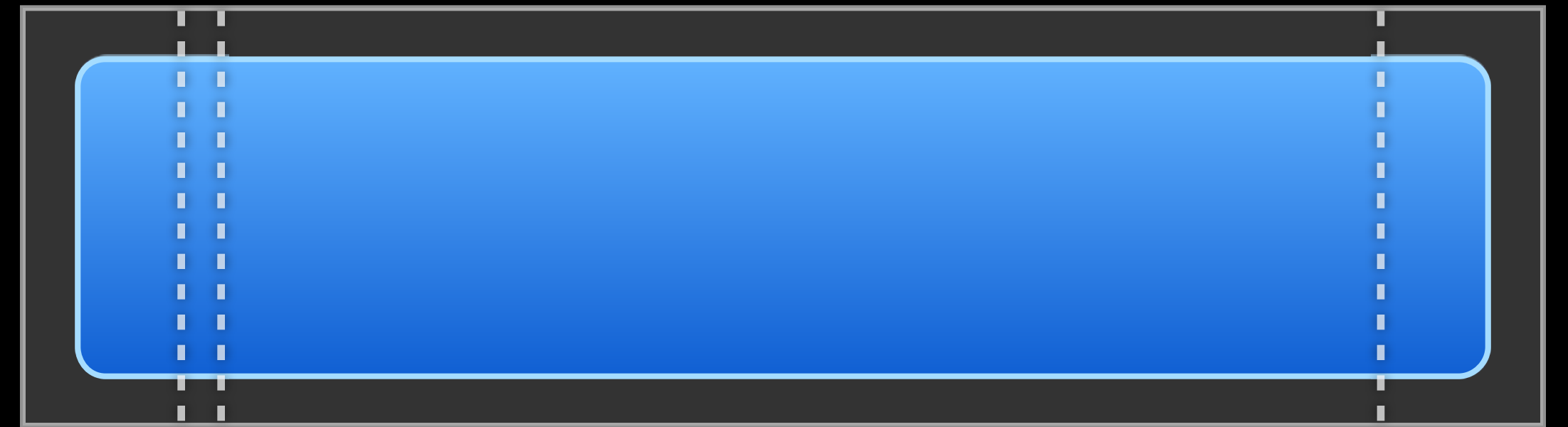


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	Size ▼	Kind
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	5.9 MB	Folder
	4.3 MB	Folder
	4 MB	Folder
	3.9 MB	Folder
	2.8 MB	PNG image
	2.8 MB	PNG image
	2.4 MB	Folder
	2.3 MB	Folder
	2.2 MB	Folder
	2.2 MB	PNG image

Take Inventory

- Open your app bundle in Finder
- Review every file
- Clean house
 - READMEs, .psd, .h and .m files
 - Stray files dragged into Xcode
 - Obsolete resources
- Use resizable images



Take Inventory

- Open your app bundle in Finder
- Review every file
- Clean house
 - READMEs, .psd, .h and .m files
 - Stray files dragged into Xcode
 - Obsolete resources
- Use resizable images
- Dispose of the trash



Use Compression

- Video
 - H.264
- Audio
 - AAC or MP3 for long tracks
 - Reduce sample rates from 44.1 kHz to 22.05 kHz

Use Compression

- Video
 - H.264
- Audio
 - AAC or MP3 for long tracks
 - Reduce sample rate from 44.1 kHz to 22.05 kHz
- OpenGL ES
 - Consider using PVRTC - 4 bits per pixel

Minimizing Install Time

- ☒ Take inventory
- ☒ Use compression
- ☐ Download things later

Considerations

- May not be appropriate for all apps
- No single answer for carving things up

Considerations

- May not be appropriate for all apps
- No single answer for carving things up
- Adds complexity
 - Need to represent status in UI
 - Have to handle cases of missing assets
 - Manage disk space
 - Complicates testing matrix

Asset Loading Strategies

- After first launch
 - Platform specific assets
 - 3.5" versus 4" iPhone
 - iPad 2 versus iPad with Retina Display

Asset Loading Strategies

- After first launch
 - Platform specific assets
 - 3.5" versus 4" iPhone
 - iPad 2 versus iPad with Retina Display
- Lazily as user approaches need for them
 - Levels in a game
 - Include first set, then download more as player progresses

Background Transfer

Overview

Background Transfer

Overview

- Service to **upload and download** data
- Transfer done **out of process**

Background Transfer

Overview

- Service to **upload and download** data
- Transfer done **out of process**
 - App can suspend or be terminated
 - Intended for large amounts of data
 - You get relaunched when transfers complete
- Initiate using NSURLSession

NSURLSession

Initiating background download

```
// Create our session configuration
NSURLSessionConfiguration *config;
config = [NSURLSessionConfiguration backgroundSessionConfiguration:@"MyOtherAssets"];
```

NSURLSession

Initiating background download

```
// Create our session configuration
NSURLSessionConfiguration *config;
config = [NSURLSessionConfiguration backgroundSessionConfiguration:@"MyOtherAssets"];
```

```
// create the background session
self.session = [NSURLSession sessionWithConfiguration:config delegate:self
                                                    delegateQueue:[NSOperationQueue mainQueue]];
```


NSURLSession

Initiating background download

```
// Create our session configuration
NSURLSessionConfiguration *config;
config = [NSURLSessionConfiguration backgroundSessionConfiguration:@"MyOtherAssets"];

// create the background session
self.session = [NSURLSession sessionWithConfiguration:config delegate:self
                                                    delegateQueue:[NSOperationQueue mainQueue]];

NSURLSession *remoteURL = ... // URL to asset

NSURLSessionDownloadTask *task = [self.session downloadTaskWithURL:remoteURL];
```

NSURLSession

Initiating background download

```
// Create our session configuration
NSURLSessionConfiguration *config;
config = [NSURLSessionConfiguration backgroundSessionConfiguration:@"MyOtherAssets"];

// create the background session
self.session = [NSURLSession sessionWithConfiguration:config delegate:self
                                                    delegateQueue:[NSOperationQueue mainQueue]];

NSURL *remoteURL = ... // URL to asset

NSURLSessionDownloadTask *task = [self.session downloadTaskWithURL:remoteURL];

// Tasks are created paused, so resume it to start download
[task resume];
```

NSURLSession

- Tasks support suspend, resume, cancel
- When complete, app resumed in background
 - (void)**application**:(UIApplication *)application
 handleEventsForBackgroundURLSession:(NSString *)identifier
 completionHandler:(void (^)(void))completionHandler;
- Re-establish session, handle results

Delegate Considerations

- Short amount of time to handle results
 - Inspect `backgroundTimeRemaining`
- Be sure to call completion handler
 - May be terminated if you fail to
- Be aware of Data Protection
 - May be running while `device is locked`
 - Keychain items and files may not be available



Storing Downloaded Data

- NSURLSession holds data temporarily
 - To keep it, move it into your sandbox
- Adhere to iOS Data Storage Guidelines
 - App Review takes these into consideration
- To exclude from backup, set **NSURLIsExcludedFromBackupKey**

```
NSURL *myURL = ... // Local file URL in app sandbox
BOOL success = [myURL setResourceValue:@YES
                    forKey:NSURLIsExcludedFromBackupKey error:&error];
```


Minimizing Install Time

- Take inventory
- Use compression
- Download things later

Background Transfers

Recap

- Clean up, compress, and possibly split up files
- Use NSURLSession
 - Background upload and download
 - Future of Foundation networking
- iOS Data Storage guidelines
 - Exclude files from backups

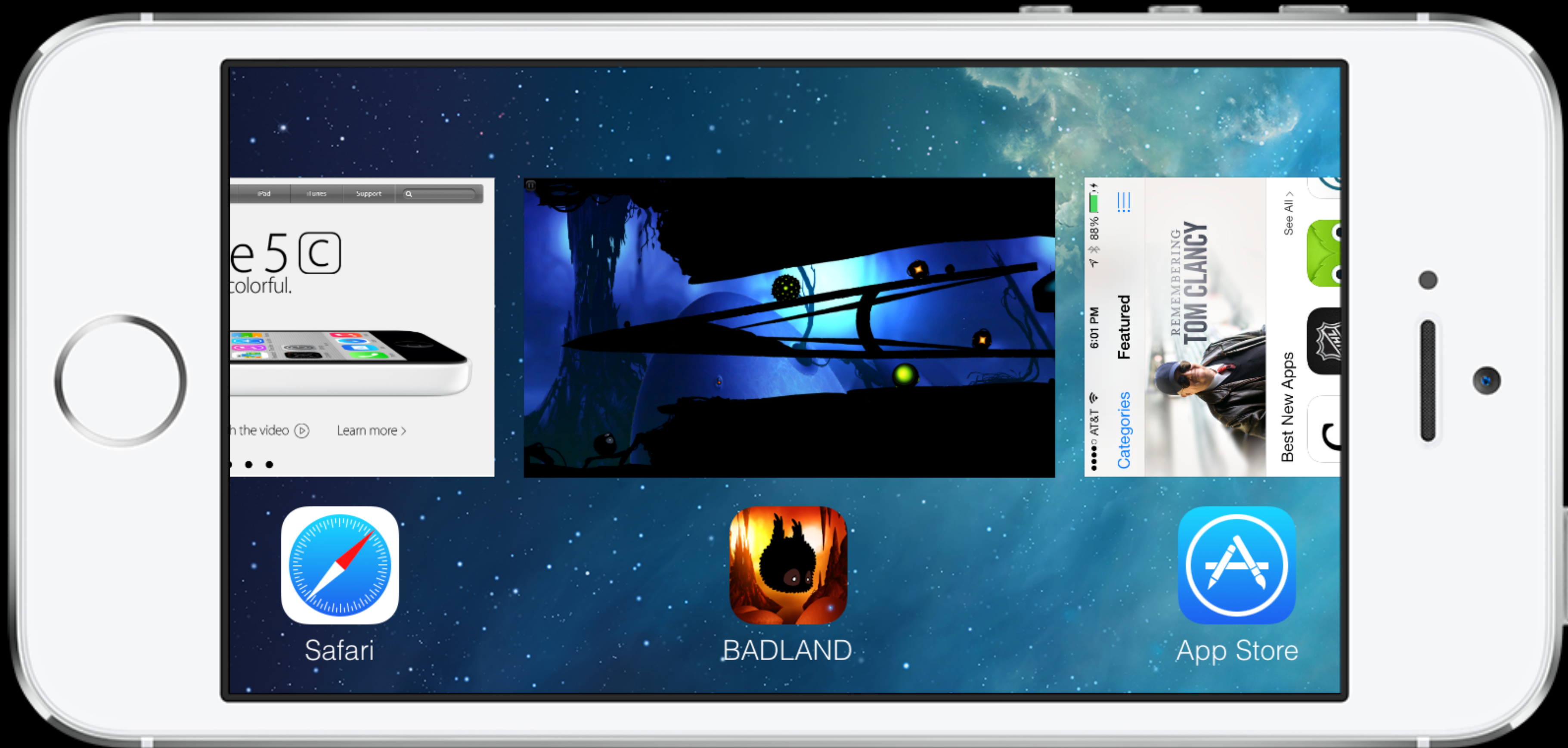
Agenda

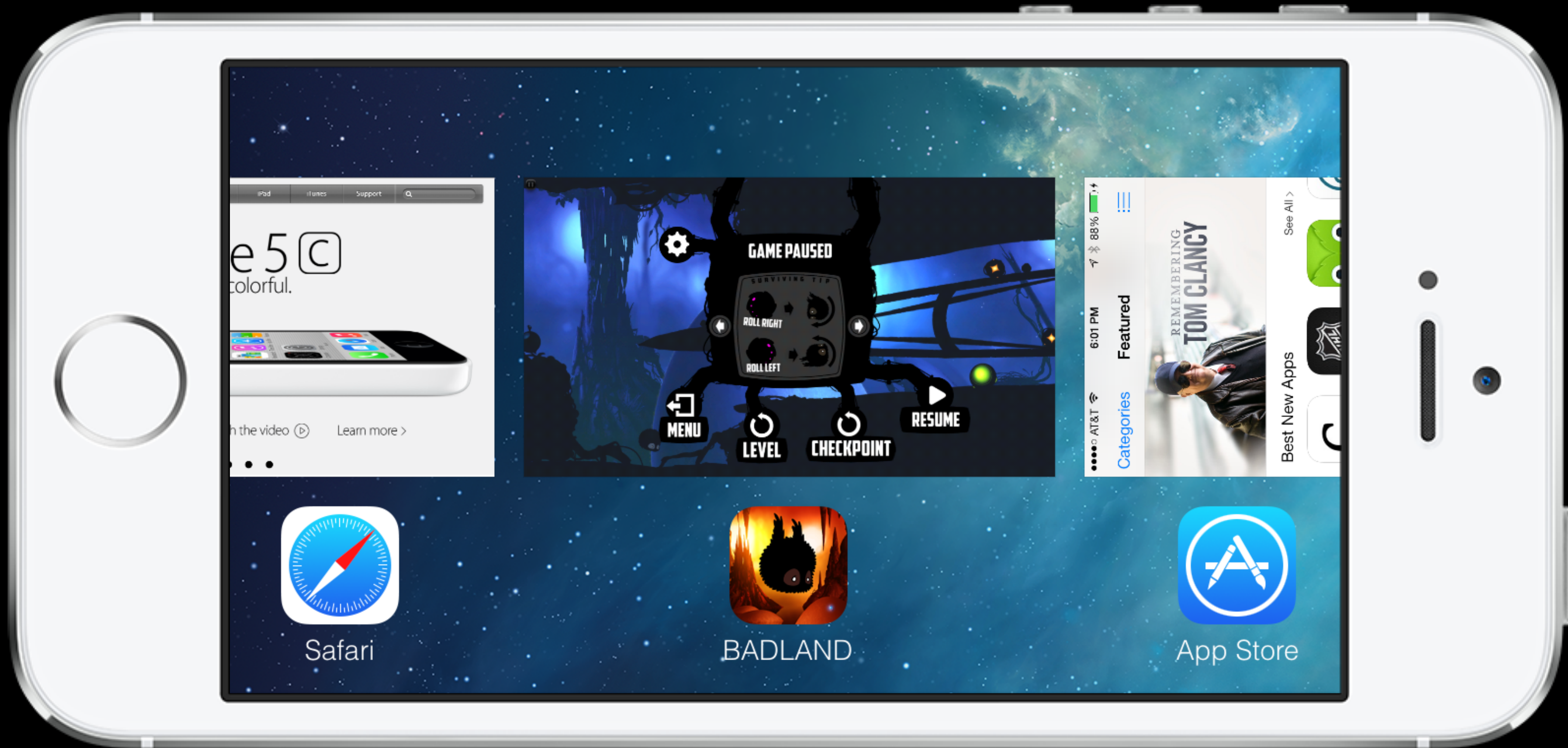
Background Transfers

Multitasking

Security & Privacy



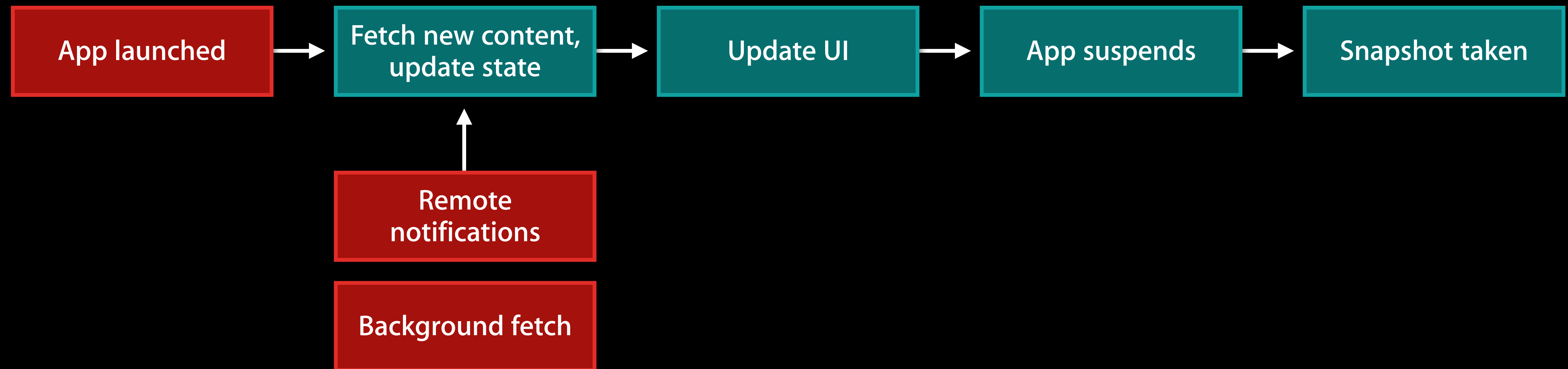






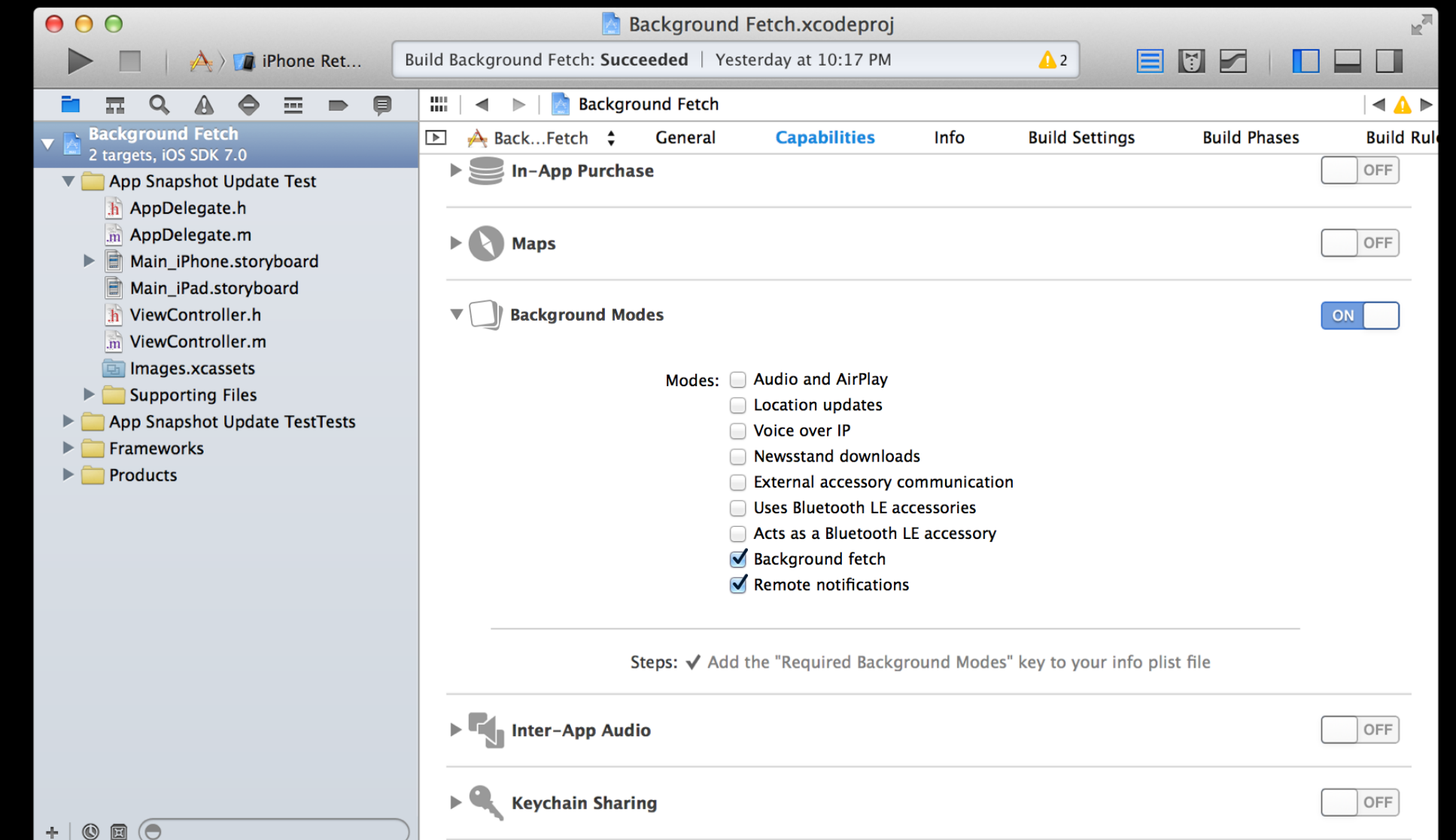


App Switcher Snapshots



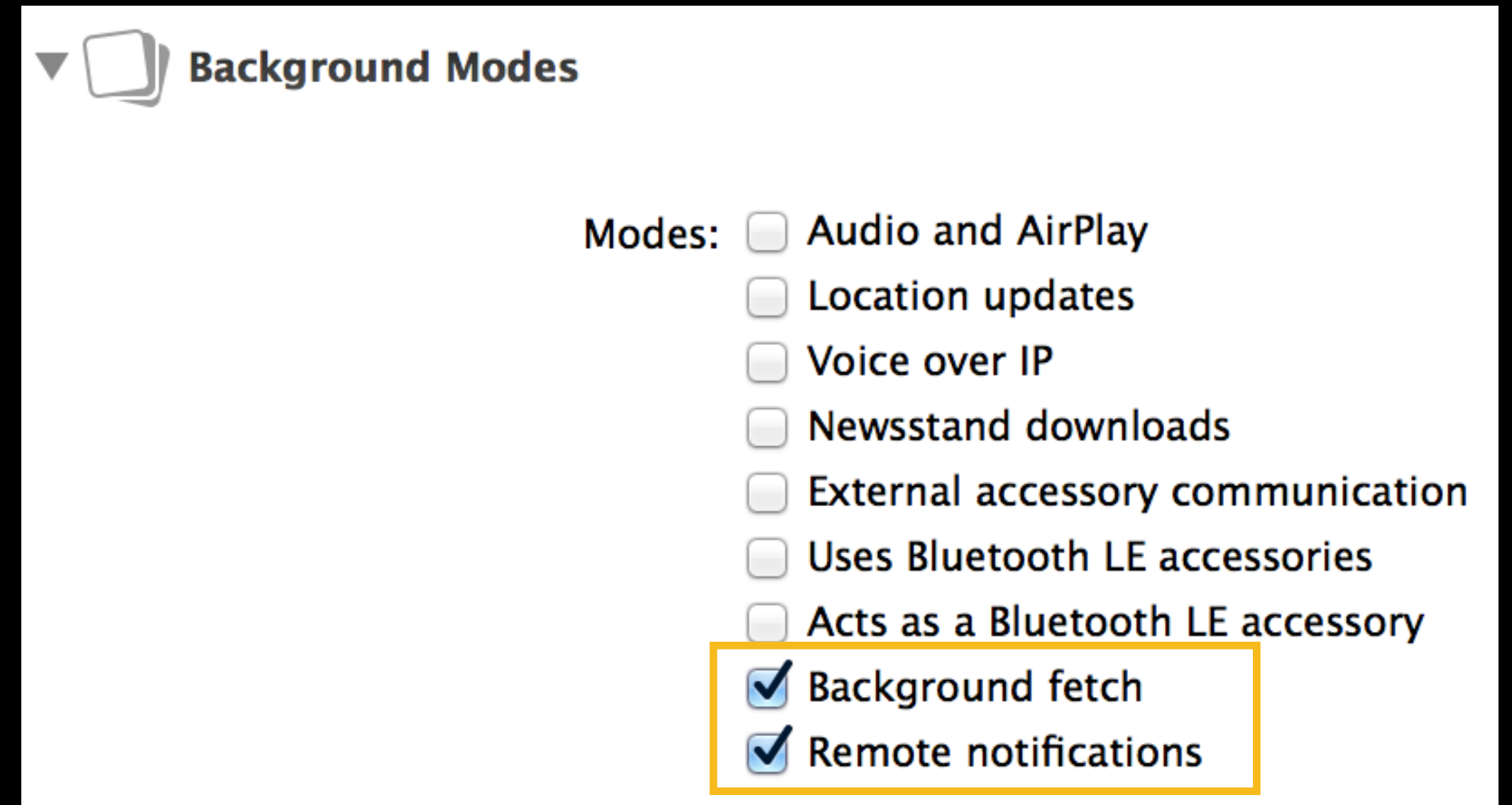
iOS 7 Multitasking

- New background modes



iOS 7 Multitasking

- New background modes
- Available to all apps
- Power smart



Remote Notifications

Overview

- Push delivered to app
 - Even when not frontmost
- If **alert** or **sound** in push payload
 - Delivered to app when user notified
- If no **alert** or **sound**
 - Silent push, user not notified
 - May be throttled

```
aps {  
  alert: "It's your turn!"  
  content-available: 1  
}
```

```
aps {  
  content-available: 1  
}
```

Background Fetch

Overview

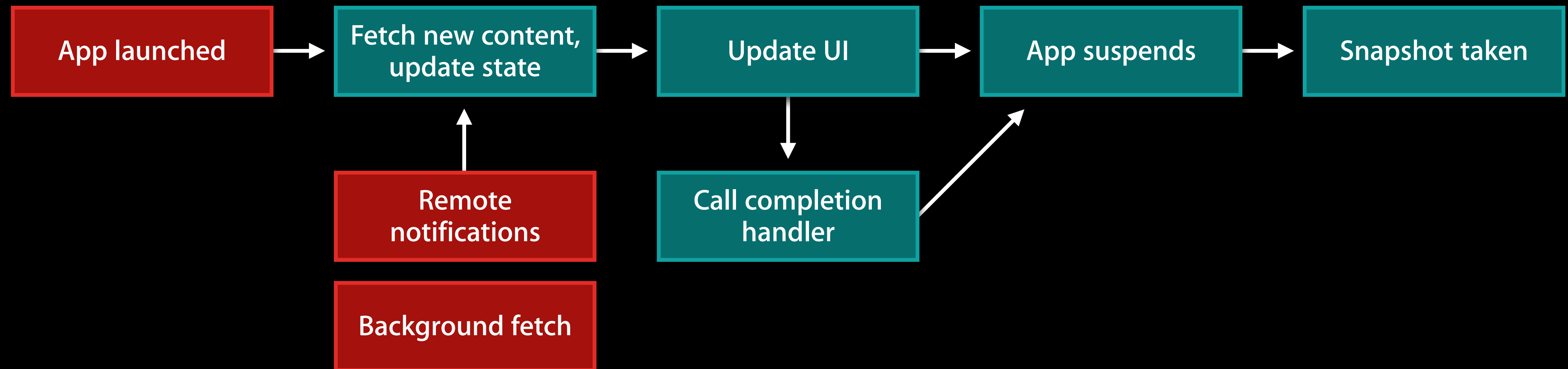
- Opportunity to fetch content in background
 - Fetch latest game state or social feeds
 - Update app snapshot

Background Fetch

Overview

- Opportunity to fetch content in background
 - Fetch latest game state or social feeds
 - Update app snapshot
- Initiated by iOS
 - Based on previous usage
 - At opportune times
 - Be prepared to run in the background when allowed

App Switcher Snapshots



Updating Content

- Call completion handler as soon as possible
- Keep fetches small
 - Use background transfers for large data
- OK to use OpenGL ES
 - Render single frame if possible



Updating Content

- Be aware of Data Protection
 - May be running when **device is locked**
 - Keychain items and files may not be available



Multitasking

Recap

- Keep your apps and snapshots up to date
- Remote Notifications
 - Silent push and background notifications
- Background fetch
 - Update ahead of launch
- Be aware of running when **device is locked**



Related Sessions

Background Transfers and Multitasking

What's New with Multitasking

Frameworks
Session 204

What's New in Foundation Networking

Core OS
Session 705

Agenda

Background Transfers

Multitasking

Security & Privacy

Security and Privacy

Paul Danbold

Core OS Technologies Evangelist

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Security Checklist

- ☐ Data Protection
- ☐ Secure Transport
- ☐ Secure Coding

Privacy Checklist

- ☐ Identifiers
- ☐ Data Isolation
- ☐ Data Collection

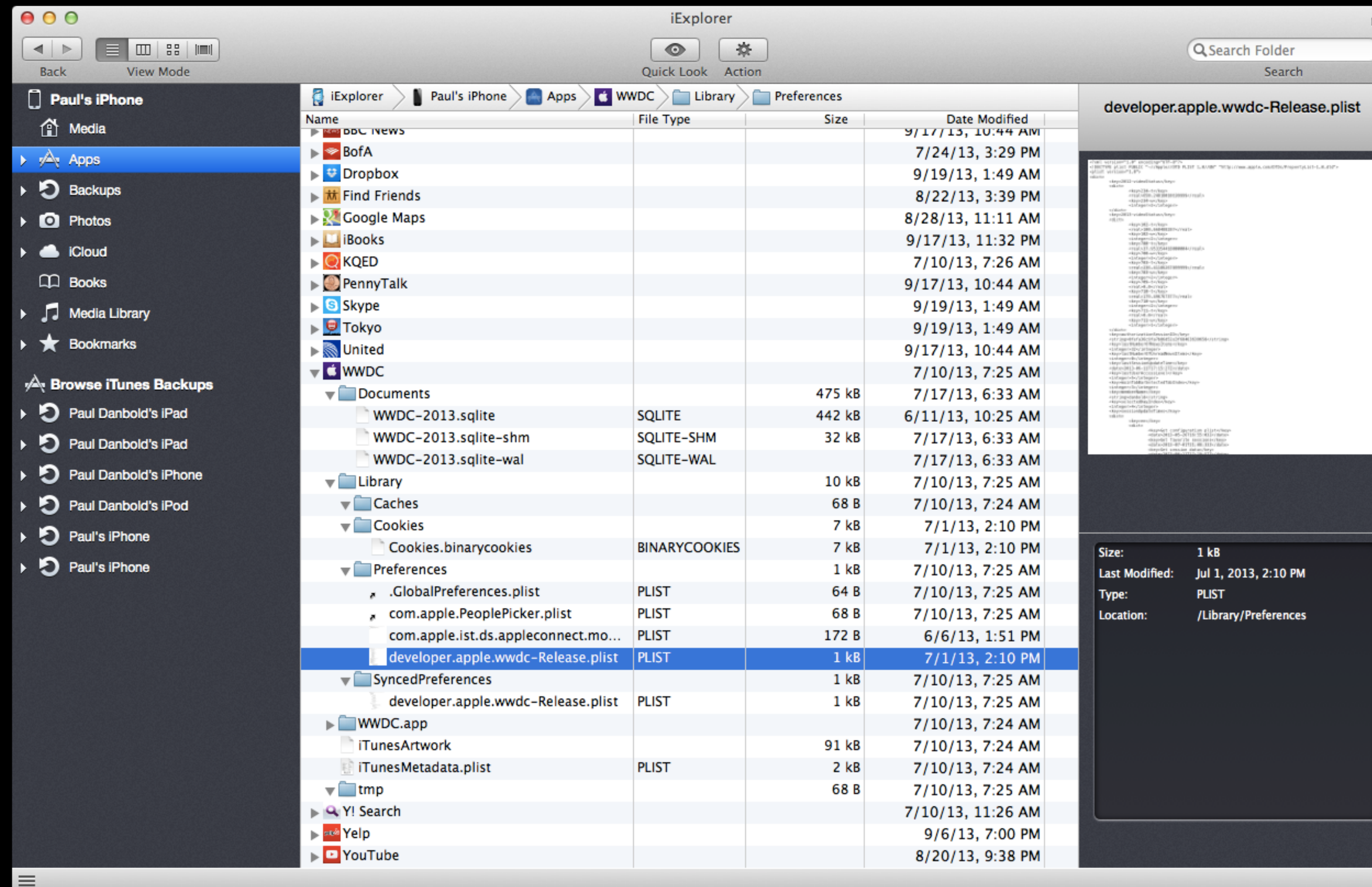




password: VtdYAd class: method: O
cgibin/login: METHOD: O
TEXT NAME: USER: O
PASSWORD: **
MIT VALUE: Submit

Protecting Data on the Device

One Good Reason for Data Protection



Adding Data Protection

```
[data writeToFile: filePath options: 0 completionHandler:^(NSData *data, NSError *error) {  
    NSLog(@"Data written to file");  
    NSLog(@"Data Protection Complete");  
    NSLog(@"Error: %@", error);  
}]
```

Data Protection Classes

- Keychain:
 - `kSecAttrAccessibleWhenUnlocked`,
`kSecAttrAccessibleAfterFirstUnlock`, ...
- NSFileManager and Core Data:
 - `NSFileProtectionComplete`, `NSFileProtectionCompleteUnlessOpen`,
`NSFileProtectionCompleteUntilFirstUserAuthentication`, ...
- NSData:
 - `NSDataWritingFileProtectionComplete`,
`NSDataWritingFileProtectionCompleteUnlessOpen`,
`NSDataWritingFileProtectionCompleteUntilFirstUserAuthentication`, .
..

Keychain Access When Device is Locked

- Use `kSecAttrAccessibleAfterFirstUnlock` for items required while running in the background
- Mitigate risks by making less protected items read-only and delete them after some period of time
- Use derived key (e.g. PBKDF#2) instead of user's password

File Access When Device is Locked

- Use less secure protection class for data acquired in background
 - `NSFileProtectionCompleteUnlessOpen` or
 - `NSFileProtectionCompleteUntilFirstUserAuthentication`
- Later, when device is unlocked, upgrade the protection class or merge newly acquired data into a protected file

Synchronizing Keychain Items

- Items without `kSecAttrSynchronizable = kCFBooleanTRUE` are not synchronized (default)
- Limited to passwords (`kSecClassGenericPassword` and `kSecClassInternetPassword`)
- For shared, synchronized items, use the same `kSecAttrAccessGroup` name

Security Checklist

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- ☐ Secure Transport
- ☐ Secure Coding

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- ☐ Data Isolation
- ☐ Data Collection

Secure Transport

One Good Reason for Secure Networking

Charles 3.8 - Session 1 *

Structure Sequence

RC	Mthd	Host	Path	Duration	Size	Status	Info
200	GET	notify4.dropbox.com:80	/subscribe?host_int=319214814&ns_map=16481928...	32868 ms	570 bytes	Complete	
CO...	CO...	mservice.bankofamerica.c...		50688 ms	46.93 KB	Complete	
200	GET	EVSecure-ocsp.verisign.com	/MFYwVKADAgEAME0wSzBJMAKGBSsOAwlaBQAEFEWn1...	691 ms	2.53 KB	Complete	
200	GET	EVSecure-ocsp.verisign.com	/MFYwVKADAgEAME0wSzBJMAKGBSsOAwlaBQAEFLnpso...	694 ms	2.44 KB	Complete	
200	GET	notify4.dropbox.com:80	/subscribe?host_int=319214814&ns_map=16481928...	44840 ms	570 bytes	Complete	

Filter: Settings

Overview Request Response Summary Chart Notes

1 QMwq—•C°FâUí~H^`f'Æâh•--+°Ô31çRÃ.,öwlp[~bÉoEiÄLc\$0'x 'ûÖðë~~~4 0-e0Ça0ÇI|zt≥ZXö;~tIÄð{70 *ÜHÜ~0Åf1 0 UUS 10U

2 VeriSign, Inc.10U VeriSign Trust Network1;09U 2Terms of use at https://www.verisign.com/rpa (c)061402U+VeriSign Class 3 Extended Validation SSL CAO 130215000000Z 140216235959Z0Ç+10 +Ç7<US10 +Ç7<Delaware10UPrivate Organization10U29274421 0 UUS10 U60603 10Uillinois10UChicago10U 135 S La Salle St1\$0"U

3 Bank of America Corporation10U Network Infrastructure1#0!Umservice.bankofamerica.com0Ç"0 *ÜHÜ~Ç0Ç

4 ÇØ€HæÂ>πLhF'Ç9öÔ4€~÷r,†é#my@S:syz`îîð!≥\|@øj|fBðÛ#ÄW:c[! ä@ä/Y1{fd

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7 flµ,§±6 -@0U~†0BU;0907†5†3Ü1http://EVSecure-crl.verisign.com/EVSecure2006.crl0DU =0;09 `ÜHÜ~E0*0(+https://www.verisign.com/cps0 U%0++0U#0Ä, äPfûπ%Z{UÖOïcèÈXkC0|+p0n0~+0Ü!http://EVSecure-ocsp.verisign.com0=+0Ü1http://EVSecure-aia.verisign.com/E VSecure2006.cer0 *ÜHÜ~Çi rdl≤T^ó~p≤ád~\ä\1jÊ"%HX&0y

8 F°Ö«^Á'èÔ2æ))ExY:ðUùëí·üw€ΠÍ&Üfi=%üör q#~ÿ

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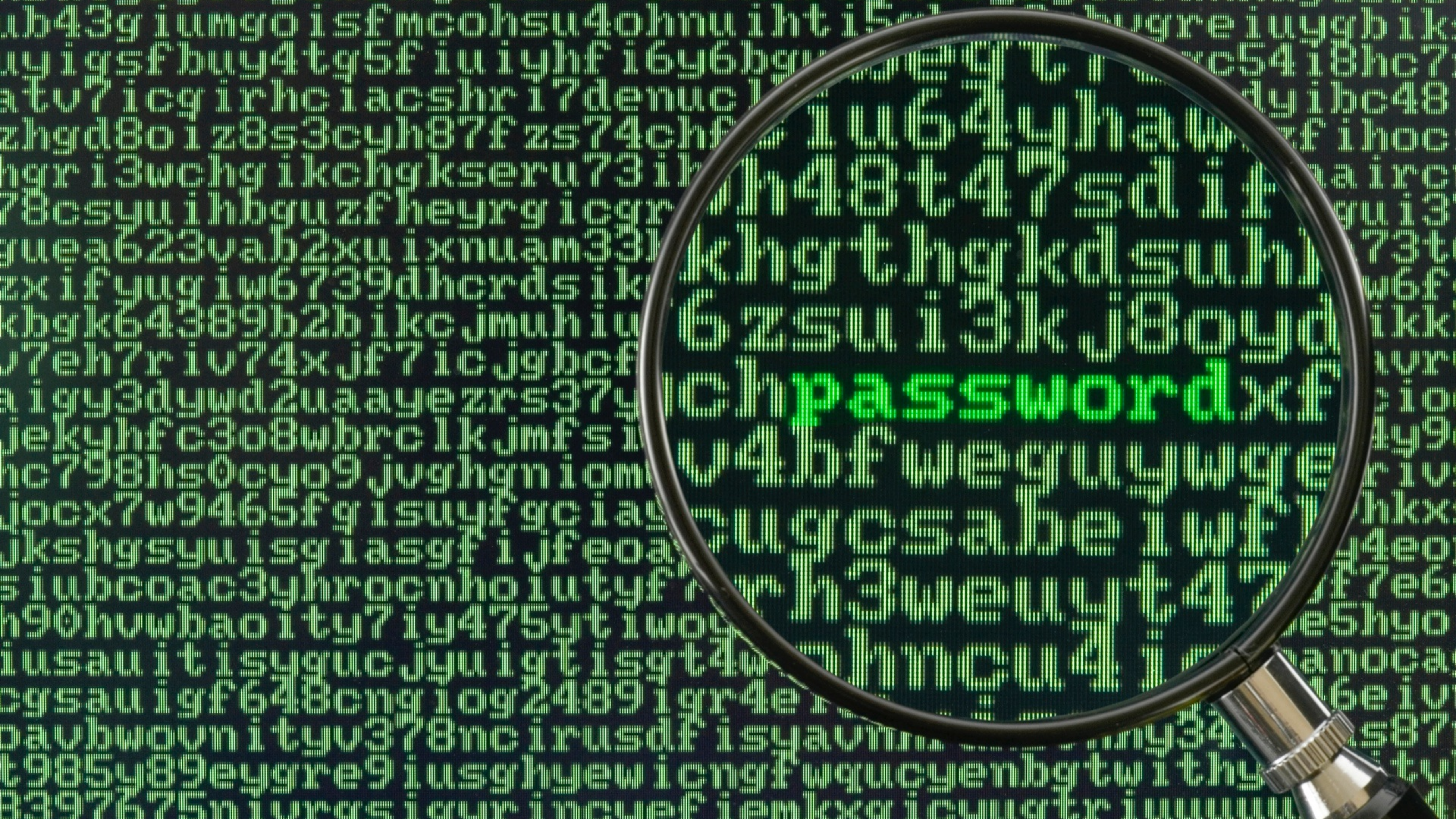
10 VeriSign, Inc.10U VeriSign Trust Network1:08U 1(c) 2006 VeriSign, Inc. - For authorized use only1E0CU<VeriSign Class 3 Public Primary Certification Authority - G50 061108000000Z 161107235959Z0Äf1 0 UUS10U

11 VeriSign, Inc.10U VeriSign Trust Network1;09U 2Terms of use at https://www.verisign.com/rpa (c)061402U+VeriSign Class 3 Extended Validation SSL CAOÇ"0 *ÜHÜ~Ç0Ç

12 Çò€†Uîú~y.,ön±[ò#ânávúµ8;µ†z¥c Ê*àH©Äùð0Zó î™oïrb#ö°zT(ò≈ -Σ◊"ð»~8«1FöîéüÓx†Σ""ITóMÂt{[°i|,flÄjðUkfEØö3ÖjðJf\$1m>>avxxðl~7ÆIÜâ·Σ·ÄΣ VüÄ†±N7~Σ/è8?PΣi(£µf_6RHCFRflcíO"æ,,f^qøûlhr°o≥[s...mΩ~øA2^ÜË~≈ £Ld—N°&e°óXx·3øh>±'Eo¿,lói~""Q£Ç"0ÇCE0U, äPfûπ%Z{UÖOïcèÈXkC 0U~0°0=U 60402U 0*0(+https://www.verisign.com/cps0=U60402†0†.Ü,http://EVSecure-crl.verisign.com/pca3-g5.crl0U~0 *ÜHÜ~B

Headers Text Hex Raw

GET http://notify4.dropbox.com:80/subscribe?host_int=319214814&ns_map=164819281_4282247213393,321951971_38976657635,322917187_69042393923,164832846_2585735145038,189782327_12086227753271&user_id=10143065



TLS

```
NSURL *url = [NSURL URLWithString: @"https://  
www.nameofmyserver.com/"];  
  
NSURLSessionDownloadTask *downloadTask =  
self.backgroundSession downloadTaskWithURL: url];  
  
[downloadTask resume];
```

Security Checklist

- ☒ Data Protection
- ☒ Secure Transport
- ☐ Secure Coding

Privacy Checklist

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- ☐ Data Isolation
- ☐ Data Collection

Secure Coding

Clang Static Analyzer

```
+ (Asset*)localizedAssetWithName:(NSString *)name
                               inBundle:(NSBundle *)bundle {
    NSString *path;
    NSString *l;

    path = [Asset pathForAssetName:name
                               inBundle:bundle];
    id a = [[Asset alloc] initWithPath:path];

    l = [self localizedAssetName:name
                               inBundle:bundle];
    if (!l)
        NSLog(@"unable to localize '%@'", name);

    [a setName:name localized:l];
    return a;
}

- (void)setName:(NSString *)name
  localized:(NSString *)l {
    _properties[@"localizedName"] = l;
    _properties[@"name"] = name;
}
```

→ 1. Value assigned to 'l'

→ 2. Assuming 'l' is nil

→ 3. Passing nil object reference via 2nd parameter 'l'

→ 4. Calling 'setName:localized:'

→ 5. Entered call from 'localizedAssetWithName:inBundle:'

→ 6. Value stored into 'NSMutableDictionary' cannot be nil

Secure Text Entry


- Marking text as secure

```
textField.secureTextEntry = YES;
```

Text View

Text

Color Default

Font 

Alignment ☒ Left ☐ Center ☐ Right

Behavior ☒ Editable ☒ Selectable

Detection ☐ Links ☐ Addresses
☐ Phone Numbers
☐ Events

Capitalization

Correction

Keyboard

Appearance

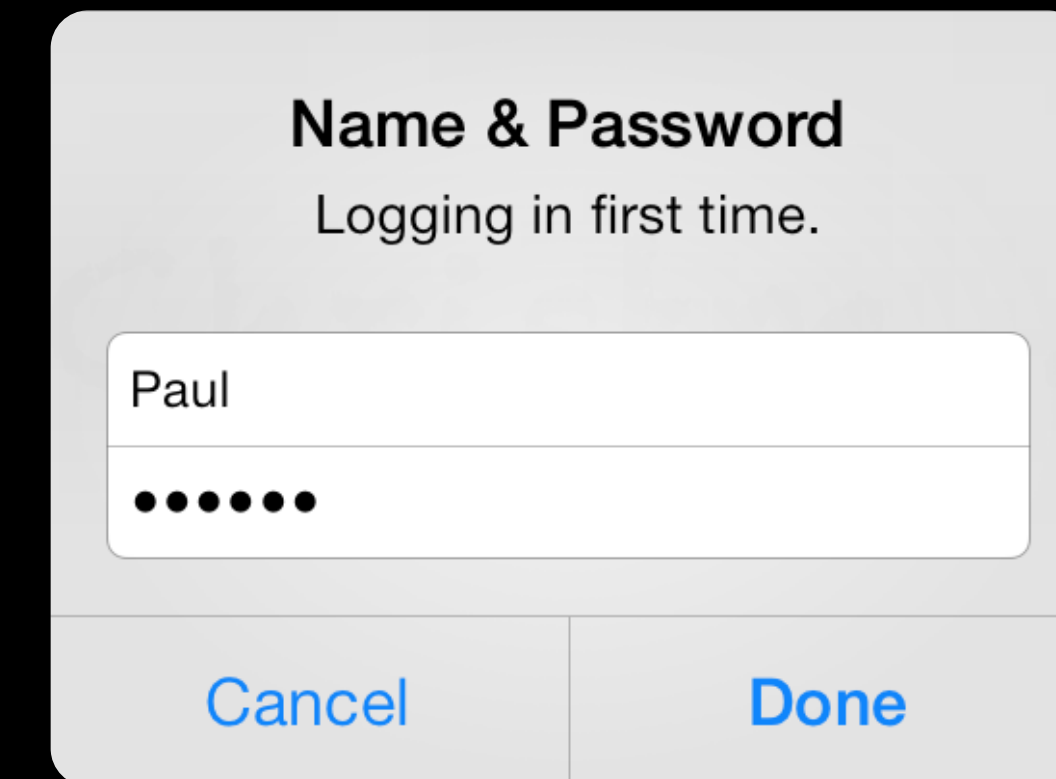
Return Key

☐ Auto-enable Return Key
☒ Secure

Secure Text Entry

- Asking for a user name and password

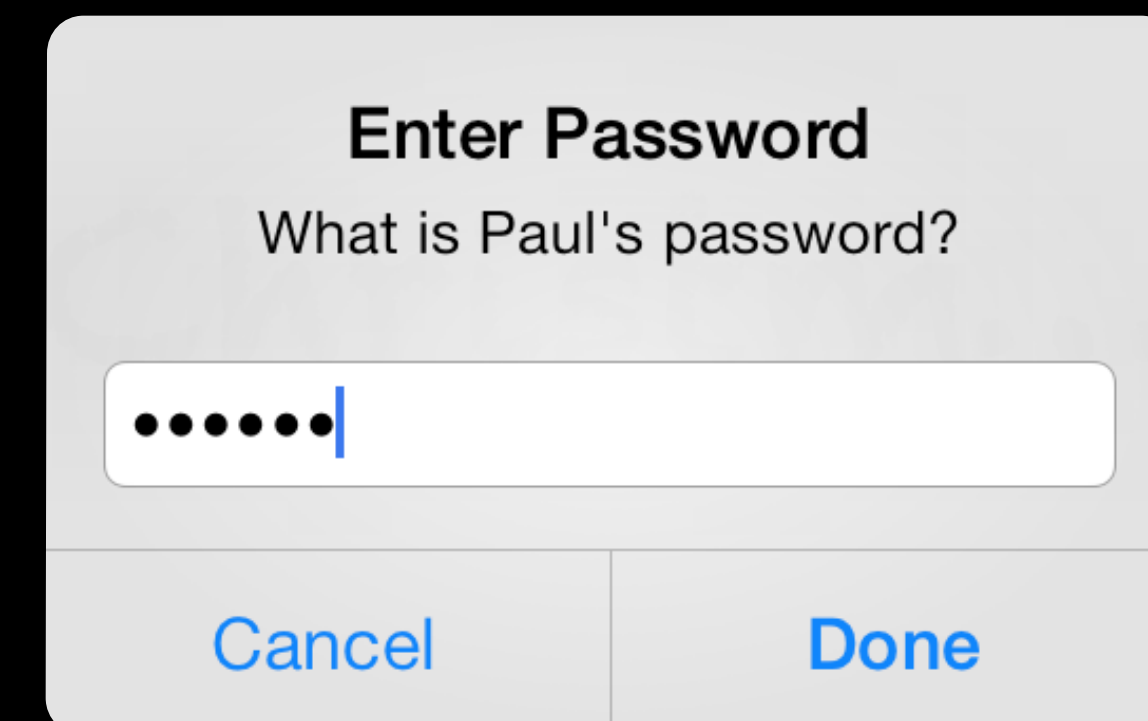
```
alert.alertViewStyle =  
UIAlertViewStyleLoginAndPasswordInput;
```



A UIAlertController dialog titled "Name & Password" with the subtitle "Logging in first time." It contains two text input fields. The first field contains the text "Paul". The second field contains six black dots, indicating a password. At the bottom, there are two buttons: "Cancel" and "Done".

- Asking for a password

```
alert.alertViewStyle =  
UIAlertViewStyleSecureTextInput;
```



A UIAlertController dialog titled "Enter Password" with the subtitle "What is Paul's password?". It contains a single text input field with six black dots and a blue cursor at the end, indicating a password. At the bottom, there are two buttons: "Cancel" and "Done".

Purge Sensitive Data

- Zeroing memory

```
bzero(&sensitiveData, sizeof(sensitiveData));
```

Tamper Detection

The Fragility of Jailbreak Detection

```
FILE *f = fopen("/bin/ssh", "r");  
if (f != NULL) {  
    // pirated! now what do we do?  
}  
fclose(f)
```

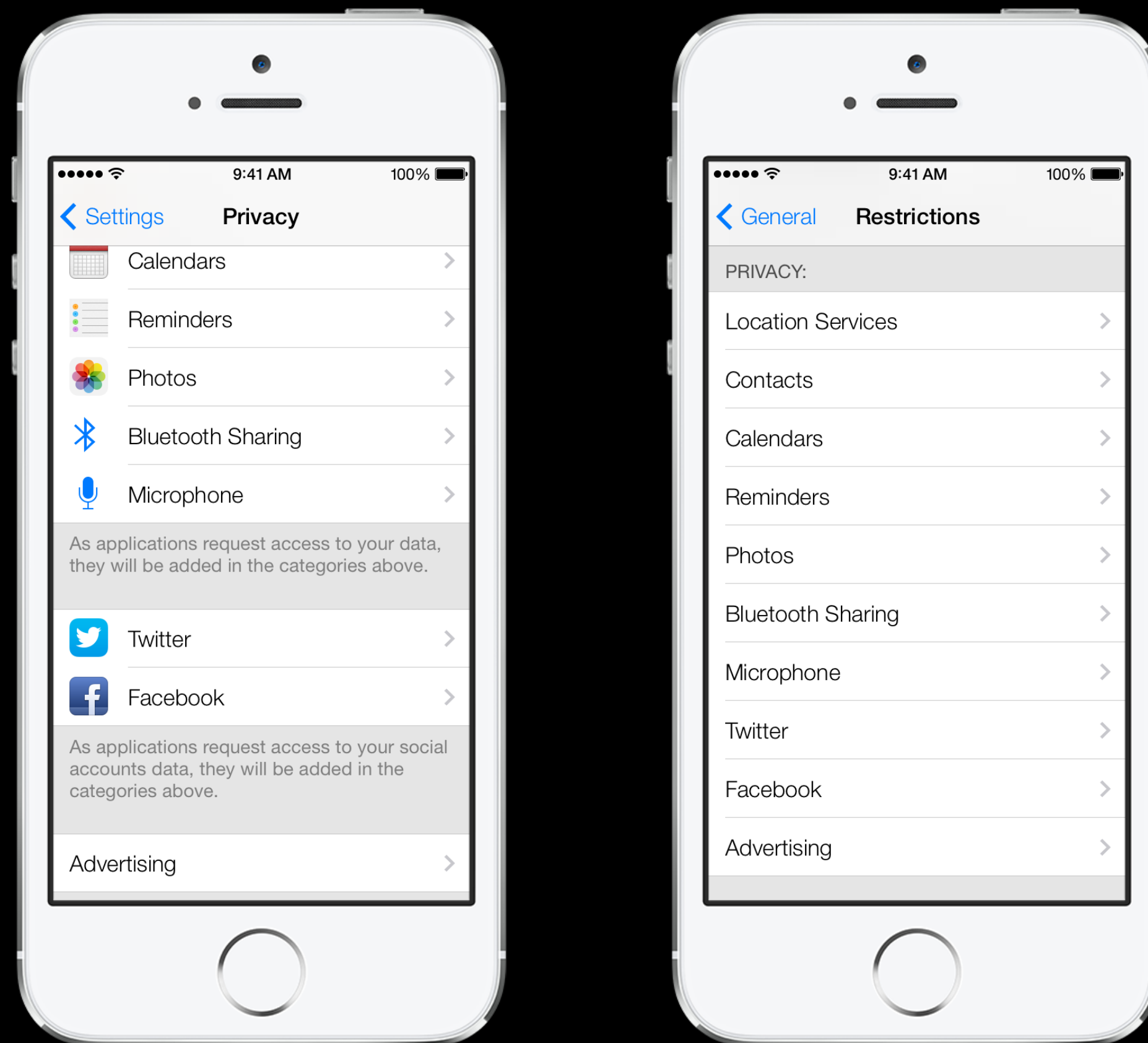
Security Checklist

- ☒ Data Protection
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Privacy Checklist

- ☐ Identifiers
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- ☐ Data Collection

Platform Privacy



**“Camera” Would Like to Use
Your Current Location**

Photos and videos will be tagged with
the location where they were taken.

Don't Allow

OK

Identifiers

UDID Replacement APIs

	Scope	Lifetime	Backed Up	Restores Across Devices
Application ID	App	Uninstall app	Yes	Yes
Vendor ID	Developer	Uninstall developer's apps	Yes	No
Advertising ID	Device	Erase all Content and Settings	Yes	No

Other Restrictions

- MAC Address

`sysctl(NET_RT_IFLIST)` and `ioctl(SIOCGIFCONF)` both return a constant value `02:00:00:00:00:00` on iOS 7

- Push Tokens

`application:didRegisterForRemoteNotificationsWithDeviceToken:`

- Named Pasteboards

- scoped to your Team ID

Security Checklist

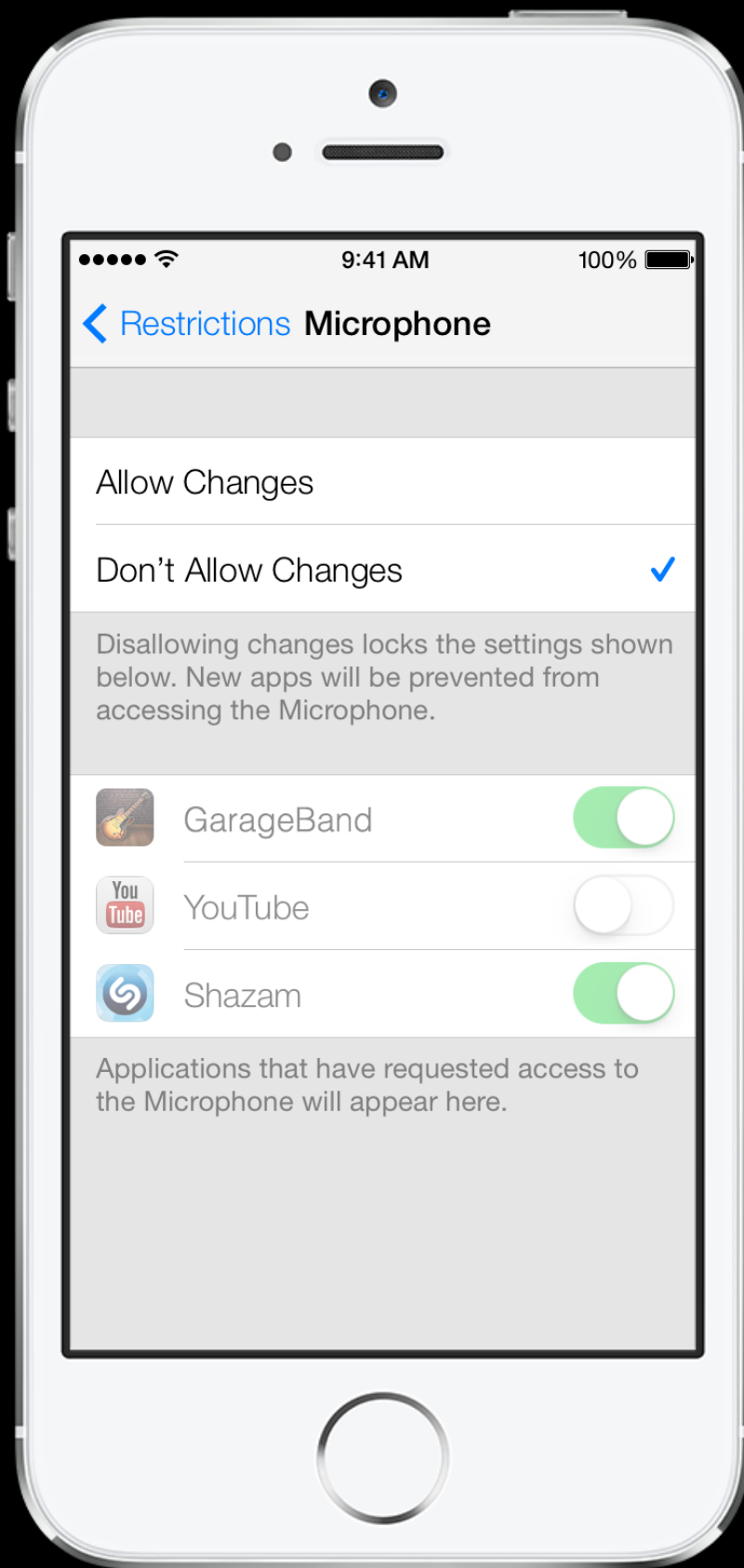
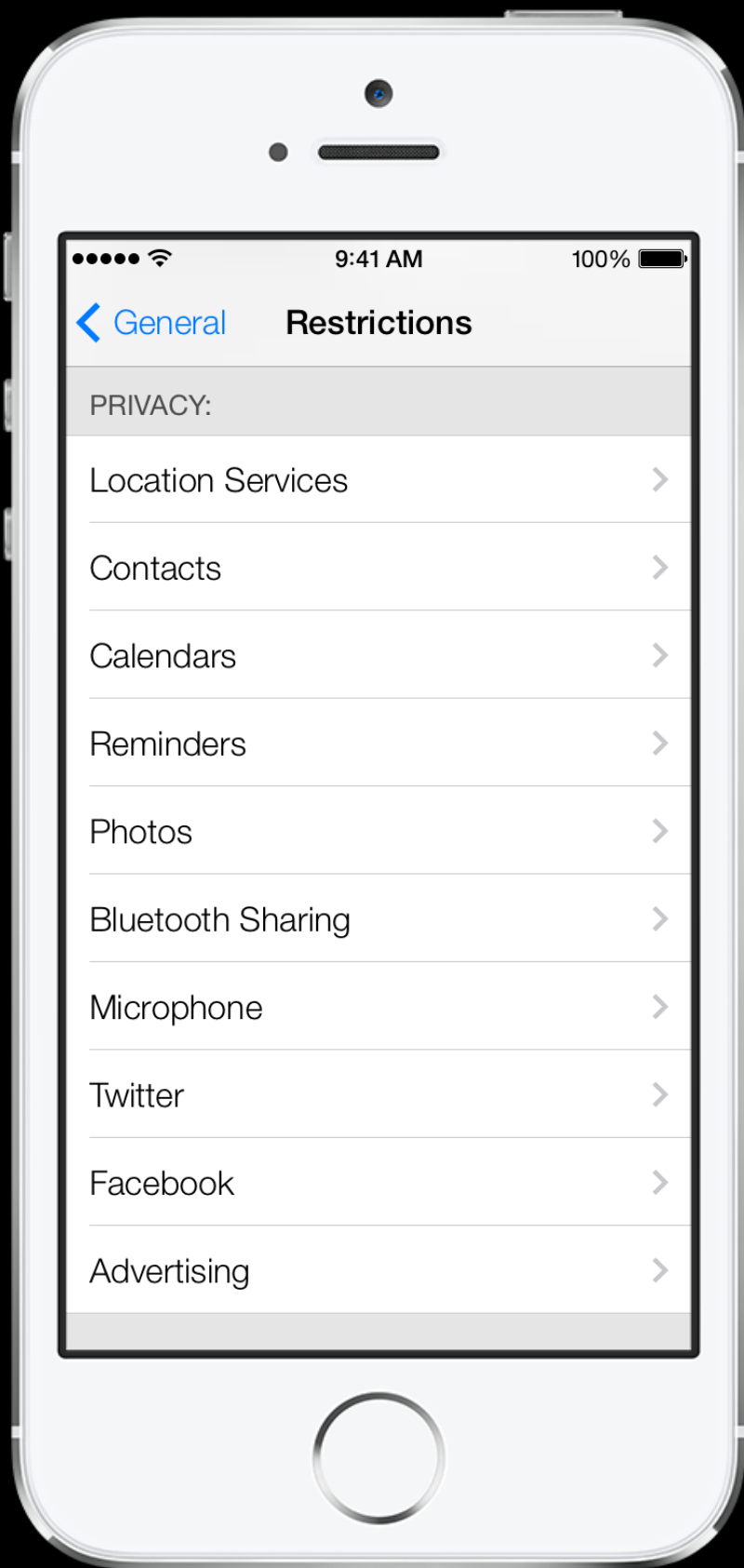
- ☒ Data Protection
- ☒ Secure Transport
- ☒ Secure Coding

Privacy Checklist

- ☒ Identifiers
- ☐ Data Isolation
- ☐ Data Collection

Consent and Transparency

Consent and Transparency



**“Camera” Would Like to Use
Your Current Location**

Photos and videos will be tagged with
the location where they were taken.

Don't Allow

OK

Consent Alerts

location	photos	contacts	reminders	calendar
social	bluetooth	camera	microphone	motion

Purpose Strings

Data Class	Info.plist Key
Location	NSLocationUsageDescription
Photos	NSPhotoLibraryUsageDescription
Calendars	NSCalendarsUsageDescription
Contacts	NSContactsUsageDescription
Reminders	NSRemindersUsageDescription
Bluetooth	NSBluetoothPeripheralUsageDescription
Microphone	NSMicrophoneUsageDescription
Motion	NSMotionUsageDescription

Testing

Permission being sought and granted

Permission being sought and denied

Permission previously denied

Permission restricted

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Data Collection

Privacy Policy

Edit English

App Name

iTunes Connect Mobile

Description

The iTunes Connect Mobile app allows developers and iBookstore providers to access their catalog and sales data anywhere on their iPhone, iPad, or iPod touch. iTunes Connect users can also view the metadata for all of their titles and set specific titles as Favorites for easier tracking.

?

What's New in this Version

Minor bug fix for push notifications.
Adds support for iPhone 5.

?

Keywords

iTunes,Connect,Sales,Trends,Apps,Updates,Revenue,Developer,Tools

Support URL

http://itunesconnect.apple.com

?

Marketing URL (Optional)

http:// itunesconnect.apple.com

?

Privacy Policy URL (Optional)

http://

?

A URL that links to your company's privacy policy. Privacy policies are recommended for all apps collecting user or device related data, and required for apps that offer auto-renewable or free subscriptions, or as otherwise required by law.

App Review and Privacy

17 Privacy

17.1 Apps cannot transmit data about a user without obtaining the user's prior permission and providing the user with access to information about how and where the data will be used

17.2 Apps that require users to share personal information, such as email address and date of birth, in order to function will be rejected

17.3 Apps may ask for date of birth (or use other age-gating mechanisms) only for the purpose of complying with applicable children's privacy statutes, but must include some useful functionality or entertainment value regardless of the user's age

17.4 Apps that collect, transmit, or have the capability to share personal information (e.g. name, address, email, location, photos, videos, drawings, persistent identifiers, the ability to chat, or other personal data) from a minor must comply with applicable children's privacy statutes

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More Information

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